

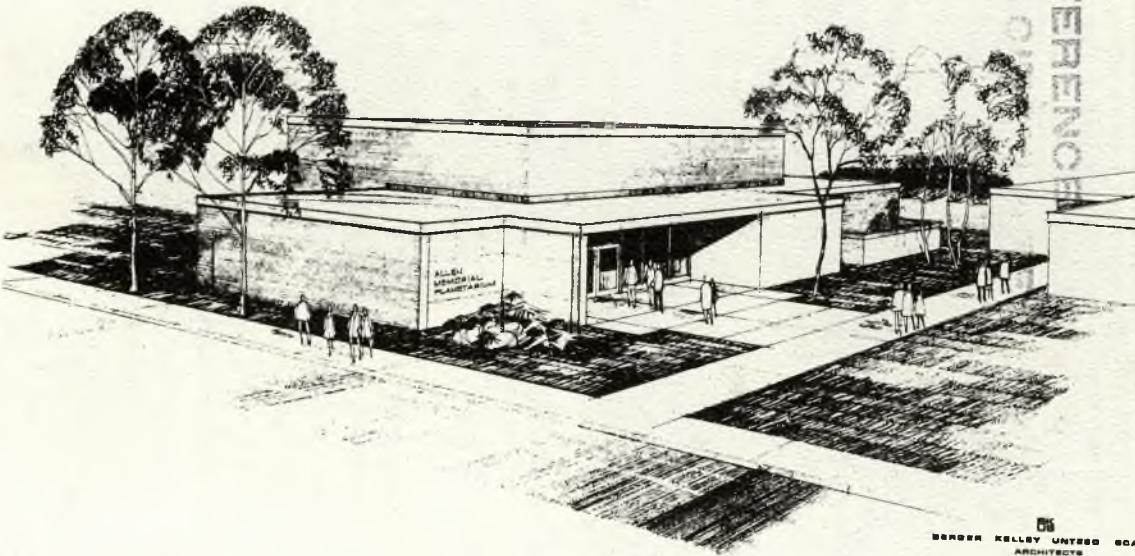
Allen Memorial Planetarium

Community Affairs File

Vigo County Public Library

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Allen Memorial Planetarium

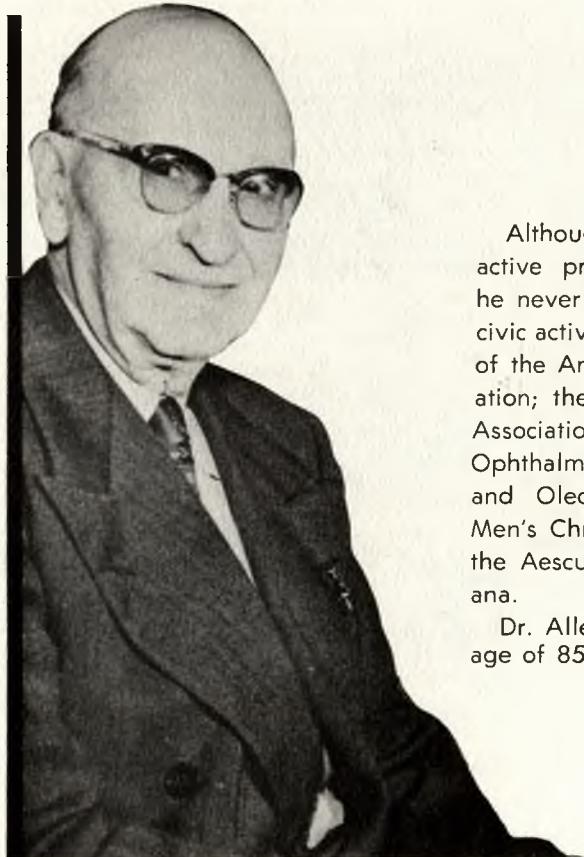
DEDICATION CEREMONY

SUNDAY OCTOBER 24, 1971

TERRE HAUTE SOUTH VIGO HIGH SCHOOL.....TERRE HAUTE, INDIANA



The programs offered at the Allen Memorial Planetarium combine many different academic disciplines. In many of the programs students do not see any stars! In some programs the physical and geographic character of the earth is studied through globes, pictures, and the apparent motion of the sun throughout the year. In other programs the mythology and nomenclature of celestial objects in other cultures are presented. In still other programs changes in man's concept of the earth from a flat disc to a sphere (spheroid) are emphasized. The programs combine geography, mathematics, and map reading and construction.



Although he retired from active practice in June, 1963, he never retired from his many civic activities. He was a member of the American Medical Association; the Vigo County Medical Association; the Academy of Ophthalmology, Laryngology, and Otolaryngology; the Young Men's Christian Association; and the Aesculapian Society of Indiana.

Dr. Allen died in 1964 at the age of 85.

DR. ORRIS T. ALLEN

Dr. Orris Allen was born in Brocton, Illinois, in 1879. He taught in the Brocton Elementary School and attended Charleston Normal College, the University of Illinois, and Northwestern University where he graduated from the College of Medicine in 1909. He practiced medicine in Ashmore, Illinois, for ten years before he moved to Terre Haute in 1929. During the 43 years he practiced in Terre Haute as an eye, ear, nose, and throat specialist, he was always involved with young people and their activities. He read widely not only in the fields of medicine and science, but also in philosophy and the humanities. He worked always to promote education and enlightenment.



MR. LLOYD L. BODIE, JR.

A graduate of Indiana State University, Mr. Bodie is the first director of the Allen Memorial Planetarium. Because Indiana has no provisions for certification in astronomy, Mr. Bodie is licensed in general science and biology. He earned his advanced degree in science education. He also received a certificate from Spitz Laboratories in planetarium education. He is a member of The Great Lakes Planetarium Association and The Middle Atlantic Planetarium Society.

The Allen Memorial Planetarium serves all areas of the Vigo County School Corporation: elementary, junior high school, senior high school, and adult. Mr. Bodie has experience in all of these levels of instruction.

DEDICATION DAY

**Sunday, October 24
2:00 P.M.**

ORDER OF CEREMONY

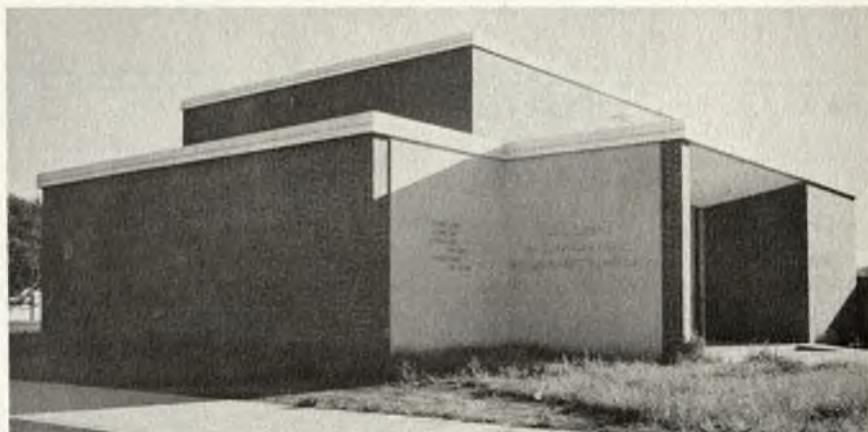
Invocation	Delaine Peffley
Pledge to the Flag	Mary Hook
Welcome	Peter A. Farmer, President Board of School Trustees Vigo County School Corporation
Presentation of Building	Mrs. Orris T. Allen
Acceptance of Building	C. Kenneth Cottom, Superintendent Vigo County School Corporation
Dedication Address	The Reverend George E. Mitchell
Introduction of Guests	Peter A. Farmer
Benediction	Chris Trummel and Debra Engle

OPEN HOUSE Student Planetarium Staff

TOM PETER
TERRY METHENY
VICKIE BOSSSTICK
DAVID MOULTON

MARIANNE OZOK
JEFF COOK
BILL ROGERS
DENNIS NOVAK

Allen Memorial Planetarium



The Allen Memorial Planetarium, located at the Terre Haute South Vigo High School site, is a separate structure measuring 73 feet, 7 inches by 73 feet, 7 inches. This site was chosen because Dr. Allen's son, Bernard O. Allen, died in a tragic airplane crash in 1930 at the site, then Paul Cox Airport.

The building is situated just north of the high school building and has its own heating and air conditioning unit. A spacious lobby allows groups to wait until the Planetarium chamber facilities are available. The director's office is behind the lobby and the Planetarium chamber is in the center of the building.



Two zoom projectors magnify detail of a heavenly body and an Orrery projector shows the solar system. An overlay projector shows comparisons. Models of the planets scaled to the sun the size of the dome are displayed.



The Planetarium chamber houses the Spitz Model A-4 Planetarium Projector. This projector rises automatically from a 20 feet well beneath the floor. A 24 inch star-ball on top projects the skies on the perforated aluminum dome, which is 30 feet in diameter. The projector can simulate the effect in the real sky of the earth's rotation, revolution, and precessional motion. All of the motions of the heavens are shown by means of the 36 projectors within the central projector.

A console board in the rear of the chamber is the control board for the presentation. Every seat is equipped with a movable arm rest desk with a panel of six buttons. The pupil presses a button to indicate on the console that he has a question. The system may be used as a testing device as well.

A complete stereophonic sound system presents background music to set the stage for historical background material.

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Community Affairs File

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Allen Memorial
Planetarium

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ALLEN MEMORIAL PLANETARIUM

TEACHER'S GUIDE

VIGO COUNTY SCHOOL CORPORATION
TERRE HAUTE SOUTH VIGO HIGH SCHOOL

WELCOME TO THE ALLEN MEMORIAL PLANETARIUM

The opening of the new facility has added a new dimension to science instruction in the Vigo County Schools. Experiences in the planetarium are specified at various levels of the science program. These experiences are planned during the astronomy and space exploration units.

Because so many students and teachers will be scheduled to use the planetarium, cooperation is essential. To secure maximum benefits and minimum confusion, the following suggestions are made:

1. If more than one visit is planned, teachers should schedule the visits within two weeks of each other.
2. Teachers should familiarize students with vocabulary, procedures, rules, and equipment for the planetarium.
3. Teachers should conduct follow-up procedures to insure maximum learning for the student.

PHYSICAL FACILITIES OF THE PLANETARIUM

The Allen Memorial Planetarium is the building north of the Terre Haute South Vigo High School. It is physically separate from the main building.

Within the planetarium chamber is a perforated aluminum dome 30 feet in diameter. In the center of the chamber is a Spitz Model A-4 planetarium projector which projects the stars, planets, moon, and sun onto the projection dome. The earth's rotation, revolution, and precessional motion are presented as in the real sky. So that the observer may view the sky as it would appear from any latitude, a 360° latitude motion is provided. The annual motions of the planets and moon, as well as the apparent motion of the sun, are shown. This model also shows roll, pitch, and yaw.

Models of the planets, scaled to a sun the size of the dome are displayed and a chalkboard illuminated with black light facilitates explanation.

THE PLANETARIUM: AN EXTENSION OF THE CLASSROOM

The programs offered at the Allen Memorial Planetarium combine many different academic disciplines. In many of the programs students do not see any stars! In some programs the physical and geographic character of the earth is studied through globes, pictures, and the apparent motion of the sun throughout the year. In other programs the mythology and nomenclature of celestial objects in other cultures is presented. In still other programs changes in man's concept of the earth from a flat disc to a sphere (spheroid) will be emphasized. The programs will combine Geography, mathematics, and map reading and construction.

PLANETARIUM PRESENTATIONS

	VISIT I	VISIT II
GRADE TWO	INTRODUCTION TO THE PLANETARIUM DAY AND NIGHT WHAT IS A STAR?	
GRADE FOUR	THE SUN AS RELATED TO THE EARTH 1. DIRECTION 2. SEASONS	
GRADE SIX	THE SOLAR SYSTEM	TIME
GRADE EIGHT	THE STARS AND CONSTELLATIONS SIZE AND COLOR	THE COORDINATE SYSTEM LATITUDE LONGITUDE

GRADES ELEVEN AND TWELVE

A COURSE DAILY IN ALL ASPECTS OF THE STUDY OF ASTRONOMY

COMMUNITY GROUPS AND ORGANIZATIONS

PROGRAMS WILL BE AVAILABLE BY REQUEST. CONTACT THE PLANETARIUM DIRECTOR FOR SCHEDULING.

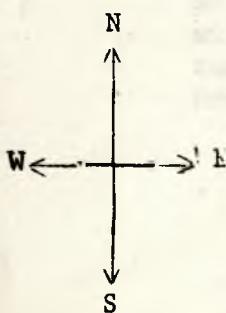
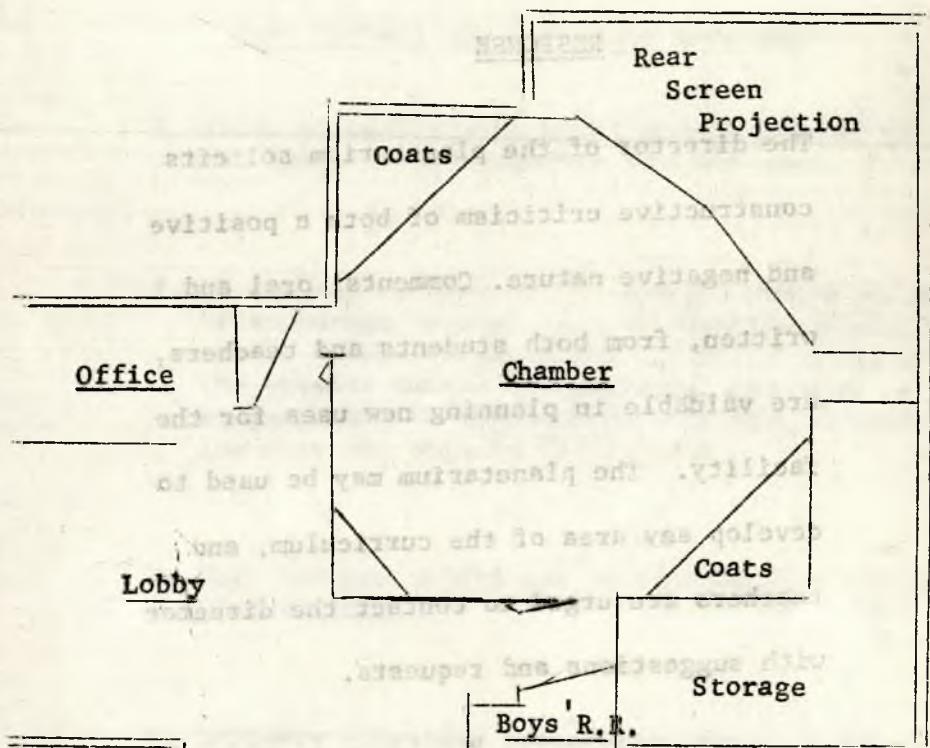
SOME SUGGESTIONS FOR CLASS MANAGEMENT

1. Water fountains and restrooms are located in the lobby to the right of the entrance.
2. If a class arrives at the planetarium when the "Planetarium in Use" sign is showing, students should remain in the lobby until the class in the chamber leaves the building. Caution students not to open the door of the planetarium when the sign is illuminated.
3. Food and gum should not be brought into the planetarium.
4. Ordinary classroom procedures cannot be followed in the planetarium. Students should be aware that the lecturer cannot call them by name; therefore, they should feel free to respond without specific procedures. The lecturer relies upon student responses to adapt the presentation to the level and needs of the individual class. Some FEW students will take advantage of the situation. The teacher is expected to exert control at any breach of conduct.

RESPONSE

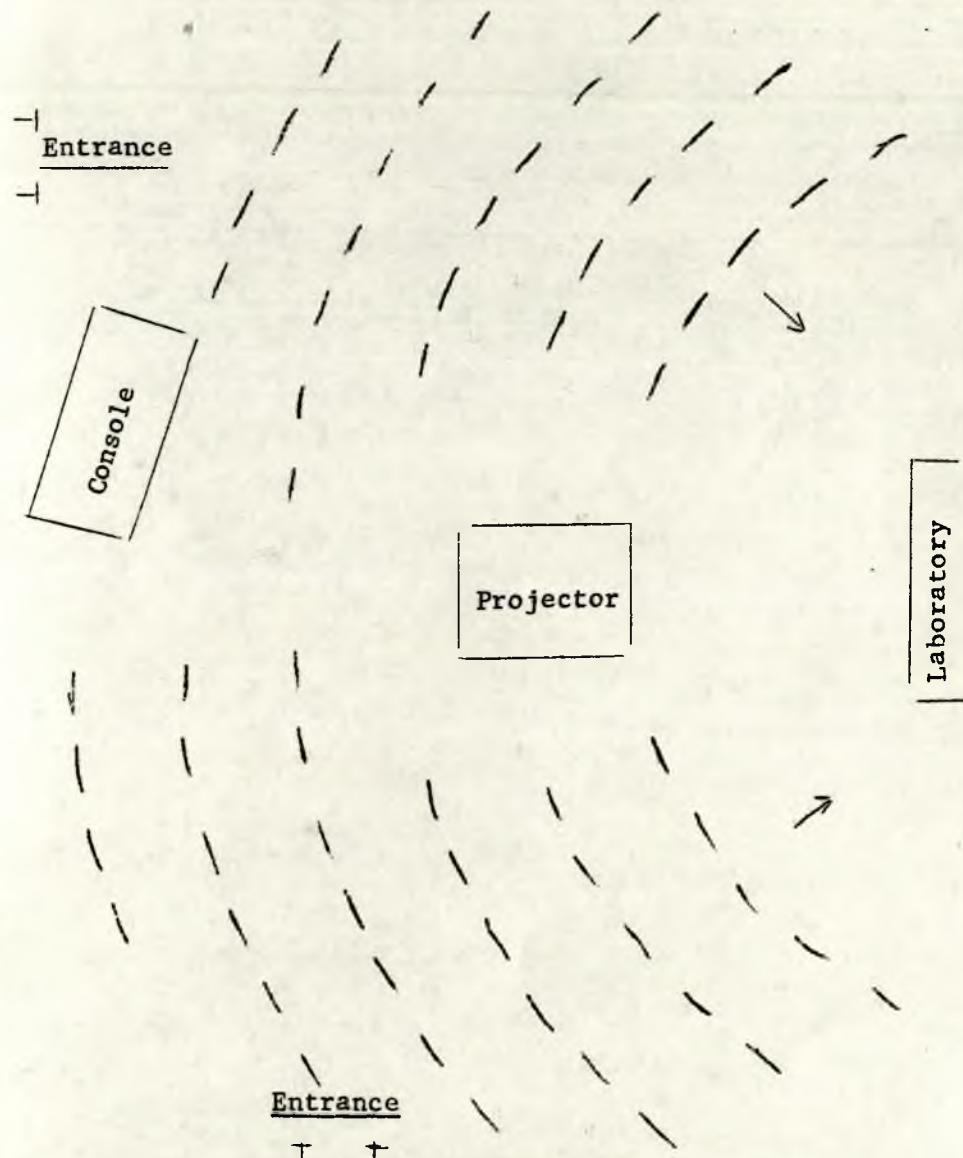
The director of the planetarium solicits constructive criticism of both a positive and negative nature. Comments, oral and written, from both students and teachers, are valuable in planning new uses for the facility. The planetarium may be used to develop any area of the curriculum, and teachers are urged to contact the director with suggestions and requests.

PLANETARIUM



South
High
School

PLANETARIUM CHAMBER SEATING



Vigo County School Corporation

667 Walnut Street Terre Haute, Indiana

Your education has been a failure, no matter how much it has done for your mind, if it has failed to open your heart.

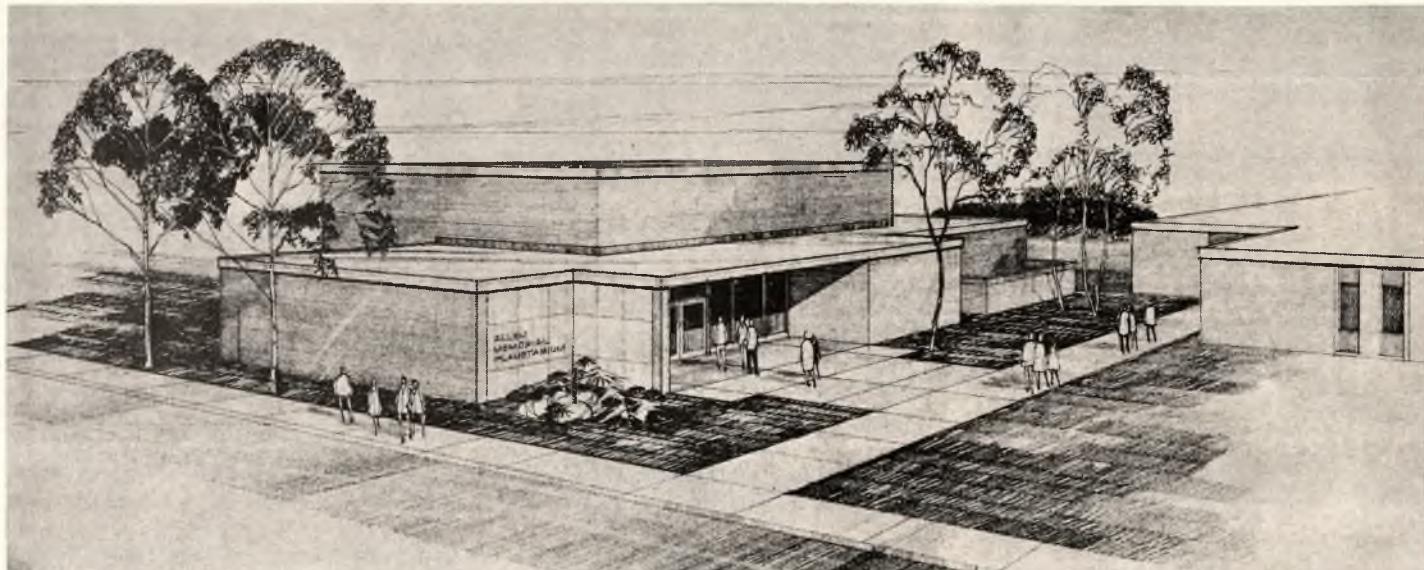


Newsletter



Volume 11 — Number 1 January, 1970

BENEFACITOR DONATES TRUST FUND FOR EDUCATIONAL PURPOSES



Architect's conception of the Allen Memorial Planetarium which will be built at the site of the new southside high school.

Due to the generosity of the late Dr. Orris T. Allen, an important educational advantage, a planetarium, will be made available to the students and adults in Vigo County. The Allen Memorial Planetarium will be constructed on the site of the new southside high school, according to the wishes of Dr. Allen's wife, Mrs. Marie R. Allen.

The south site was selected because Bernard O. Allen, the late son of Dr. Allen, was killed in an airplane crash in 1930 at what was then known as the Paul S. Cox Airport.

A trust fund established under the will of the late Dr. Allen stipulated that the fund be used for educational purposes as the Trustees of the Vigo County School Corporation saw fit.

This fund has been designated for the construction and equipment of the facility, according to the announcement by the Terre Haute First National Bank, as trustee. King Fasig, vice-president and trust officer of the bank, who has been working closely with the School Board, administrative staff, architect and the Spitz Laboratories for the past 18 months, said the planetarium will be ready for use by Sept. 1971, the date for opening the new high schools.

The planetarium will be one of the finest in the country and will be used for all grade levels, both elementary and secondary, as well as for adult training groups and for in-service training of teachers. Two classes of students will be brought to the planetarium by bus for simultaneous

instruction. It will provide an opportunity for team teaching and large group instruction for secondary school students as well as for regular astronomy classes.

The planetarium instrument, being built by the Spitz Laboratories, Inc., is one of the most up-to-date available. It is a time and space device that accurately recreates the appearance and motions of the heavens by the use of mechanical, electrical, and optical science.

Dr. Huys stated the classroom will seat about 60 people at one time and will feature swivel and tilt back chairs with individual and group

(cont. on page 4)

Benefactor is Pioneer Local Doctor



Dr. Orris T. Allen

Dr. Orris T. Allen, a highly-respected person in the local community, died in 1964 at the age of 85. He had retired from active practice of medicine in June, 1963, after specializing in eye, ear, nose and throat for 43 years.

Dr. Allen was born in Brocton, Illinois, May 13, 1879, and attended Brocton schools and later taught at the Brocton elementary school. He attended Charleston Normal College and the University of Illinois and graduated from the College of Medicine at Northwestern



Looking over plans for the planetarium are pictured l. to r., King F., vice-president and trust officer of the Terre Haute First National Bank; Dr. Iver C. Bell, School Board president; Willard Blocksom, High School Building Corporation president; and Dr. George Huys, school superintendent. Seated is Mrs. Marie R. Allen, wife of the late Dr. Allen.

University at Chicago in 1909. He practiced at Ashmore, Ill., for 10 years. In 1920 he assumed the welfare work in his field at the Rose Dispensary in addition to his regular practice.

Dr. Allen belonged to the American, Indiana, and Vigo Medical Associations, the Academy



Picture showing the interior of the Planetarium.

of Ophthalmology, Laryngology and Oleontology, the Y.M.C.A. and the Aesculapian Society of Indiana.

Dr. Allen was a humanitarian and was often quoted as saying that the salvation of this world is through education. Science was one of his prime interests. One of his favorite books was *Design of the Universe*. He had inscribed on the fly leaf of this book a quotation from a speech he had heard or read: "No free country can long survive the impact of organized selfishness. If we live solely for ourselves and our generation, there is no hope for our offspring. The greatness can be measured by the concern of its people for posterity."

School Board Dateline

February 9

Regular Meeting,
8 p.m. at 667 Walnut.

February 23

Regular Meeting,
8 p.m. at 667 Walnut.

NEGRO HISTORY WEEK OBSERVANCE PLANNED

Negro History Week will be observed by schools throughout the county during the week of February 9-13. A steering committee has been meeting since November to map out plans for the observance. Bulletin boards, special classroom discussions, and assembly programs will be featured during the week.

Members of the steering committee include Robert Ahrens, social studies consultant who is Chairman of the Committee. Committee members are: Miss Dorothy Becherer, supervisor secondary education; Mrs. Juanita Sparks, supervisor elementary education; Mrs. Edith Bigham, department head, McLean Junior High; Mrs. Patricia Bristol, librarian at Meadows and Crawford; Glenden Campbell, department head, Garfield High School; John Etling, art teacher at Concannon Junior High School; Ronald Hall, social studies, Wiley High School; Mrs. Ruth Itamura, Davis Park teacher.

Also Robert Lemmon, department head, Wiley High School; Miss Mary Martin, Fairbanks teacher; Mrs. LaRosa Pate, English teacher, Sarah Scott Junior High School; Edward Russell, Rankin School principal; Mrs. Carolyn Roberts, Fuqua teacher; Mrs. Elizabeth Trimpe, coordinator of public relations and Mrs. Harriett McCullough, chairman, elementary art; Don Turner, president, NAACP; Mrs. Alice Wert, library Supervisor; and Mrs. Patty Mayrose, NAACP.

Among the resource persons listed as speakers for all school convocations are Mrs. Jean Anderson; Dr. Louis Anderson, dentist; Rev. Elmer Arnoldd, minister and executive director, Terre Haute Human Relations Commission; Dr. Iverson Bell, president, Board of School Trustees; Dr. H. M. Bristol, physician; Dr. James Conyers, ISU; Mrs. Jean Conyers, Community Action Program; Dr. D. L. Froe, Pfizer Company; Dr. Andre Hammonds, ISU; and Fred Hord, graduate student at ISU.

Also Winton Jones, druggist; Mrs. John Lyda, retired teacher; Dr. Wesley Lyda, ISU; Mrs. Darthula Millender, author of children's books and librarian at Gary; Manny Newsom, head of student affairs at ISU; Allen Parks, retired principal.

Herman Roberts, consultant, Metropolitan Insurance Company; Dr. Geneva Ross, head of Project Read for the schools; Louis Russell, a teacher in the Indianapolis schools; Mrs. Jane Shackelford, poet, author, and retired teacher; Don Turner, president, National Association for the Advancement of Colored People; Glen Tyler, accountant and president of the Mid-West Consulting firm in Gary; Thomas Walden, supervisor, Terre Haute Post Office; and Ed Russell, Rankin School principal.

Dr. Carter G. Woodson, founder

of the Association for the Study of Negro Life and History, encouraged many students to probe the Negro's past. In 1926, he began the observance of Negro History Week in order to acquaint all Americans with the role and contributions of black Americans.

Since 1926 Negro History Week has been observed with ever-increasing importance. With the increased emphasis on the rights and heritage of all Americans, proper observance of the role of the Afro-American becomes even more significant in the light of contemporary affairs.

Few people in the United States realize the full extent of Negro contributions to American life. The purpose of this observance of Negro History Week is to "point up" these contributions.



ENRICHING THE CURRICULUM--Mrs. Adelaide Shelton, Thompson School kindergarten teacher, discusses the significance of Negro History Week. She uses an African drum, which was brought her by a friend who was in charge of setting up the Teacher Corps in Nairobi, to interest the students. Mrs. Shelton's friend worked in the Teachers Corps as a part of her doctorate work at Amherst University. Troy Scott holds the drum. Seated l. to r. (back row) Laura Nasser, Menka Johnson, Michael Ronan, Phillip Acuff and Jimmy Cagle III. Front row l. to r., Kathy Bragg, Jeffrey Taylor, Judy Matherly, Abby Barbee and Monica Humphrey.

Superintendent's Message

Dr. Orris T. Allen was a person dedicated to providing educational opportunities for young people. He is remembered first and foremost as a humanitarian. The community owes a debt of gratitude to this far-sighted individual for providing a trust fund which he directed be used for educational purposes. I am confident that all of us are especially appreciative of this exceptional gift that, as you know, is being utilized to construct a planetarium at the southside high school.

The Allen Memorial Planetarium also will be available to both the youth and adults in this community and constitutes a significant educational addition. Certainly such a gift will influence future generations and live as a fitting memorial to the generosity and love of education exemplified by Dr. Allen.

Planetarium Donated

(cont. from page 1)

response systems, a rear projection area and a spacious lobby with display area. The facility will have separate access so that it can be locked off from the rest of the building, as well as a separate heating and cooling system, office and storage facilities.

According to Dr. John E. Kosoloski, director of the Bureau of General and Academic Education for the Pennsylvania Department of Education, "A planetarium can be a very effective instrument to add instruction and motivation to the science program at both the elementary and secondary levels. It

can also relate effectively to the teaching of such areas as mathematics, geography, and literature."

Architectural services for the planetarium are being provided by the firm of Berger, Kelley, Unteed, Scaggs and Associates. The successful bidders for the construction of the planetarium were J. L. Simmons, General Contractor (also general contractor for both new high schools); Sycamore Engineering and Manufacturing Co. of Terre Haute, plumbing, heating and air-conditioning; and AAA Electric of Terre Haute, electrical.

POTPOURRI

Bids on the new West Terre Haute Elementary School will be opened Thursday, Feb. 12 at 2 p.m. at Meadows School Snow Phone Number is 234-2602 Junior Great Books Leadership Training Course is off to a flying start Dental Health Week is Feb. 1-7 Don't forget to return those Newsletter Questionnaires Practical nursing students will graduate Feb. 13 at 8 p.m. in ceremonies at Woodrow Wilson



NEWSLETTER

Published eight times annually by

**VIGO COUNTY
SCHOOL CORPORATION**

667 Walnut Street
Terre Haute, Indiana 47808

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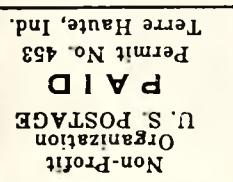
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Vigo County Public Library

Welcome to the Allen Memorial Planetarium. Astronomy has a stake in the celebration of Christmas, in the scriptural story of the star of Bethlehem and the answers to the many questions that are asked. The Christmas story is a vehicle for many kinds of information and an opportunity to enhance the value of the planetarium in the community. Citizens in Vigo County are extremely fortunate in having the Allen Memorial Planetarium. The main concern of the planetarium is the instruction of Astronomy in the Vigo County School Corporation. A planetarium has the ability to relate all subject areas to astronomy. One of the favorite topic's at this time of year is the Star of Bethlehem. We hope to combine the many aspects of scriptural and scientific information known to us today and bring you our interpretation of the Christmas story.

You may notice that night is coming upon us and we see the heavens in their full splendor. The constellation patterns are no different than when Man first invented them centuries ago nor will they change for many centuries to come.

In Terre Haute, Indiana the north star (Polaris) during our lifetime and for several generations to come is at the Celestial north pole and all stars appear to turn around it. We are going to set the sky as it appeared in 9 B.C. in Bethlehem. Notice the stars no longer appear to turn about Polaris the north star. Now, the closest star

to the pole is Kochab. Looking at the surrounding countryside you discover that the land is not very fertile. Agriculture surely does not flourish. The principle occupation is sheep-herding.

What was the star of Christmas? Does anyone know for sure? Although we may never know just what the star actually was, we have a good idea. Perhaps you are thinking, why not run the planetarium instrument back 1,972 years from 1972 to the night of December 25th and look for the star? It is not that simple. It was many centuries after the birth of Jesus that a system of numbering the years, based on his birth, came into common usage. It wasn't until the year now called 533 A.D. that a monk, by the name of Dionysius, decided to design a calendar divided into two parts. The pre-Christian or B.C. years, and those in the year of his Lord, the A.D. years. Up to that time, the calendar used was based upon the founding of Rome. The year in which Rome was founded was called year 1, followed by year 2, 3, 4, 5, and so forth Ab Urba Condita, which means from the founding of the city. Dionysius wanted to change all that. But he had a problem! He had to decide upon a date for the birth of Jesus and it wasn't easy. Reading the writings of many men, he found in those of Clement of Alexandria, who wrote around 100 A.D. that Jesus was born in the 28th year of the reign of Caesar Augustus and Dionysius said "Ah Ha! - that's the answer! All I have to do is find out when Caesar became the ruler of the Roman Empire, count ahead 28 years, and that will be the year in which Jesus was born!" Well - he searched the records and found that it was in

the year 727 Ab Urba Condita when a man by the name of Octavius assumed the title of Caesar Augustus. But that's only a title and it may not have been the date on which he became ruler of the Roman Empire. But taking the year 727 A.U.C. as the starting point, and counting ahead by the inclusive method, Dionysius arrived at the year 754 Ab Urba Condita as the year for the birth of Jesus. However, we have reasons to believe that this was in error by four years because Octavius was really the ruler of the Roman Empire before this. It was not until four years after that the title of Caesar Augustus was conferred upon him. Thus, there's a probable error of four years. But there is still another error in our calendar-keeping because Dionysius took that year of 754 A.U.C. and called it 1 A.D. This he should not have done. He should have called it the year 0. After all, when a child is born he is not one year old. We need a zero as a dividing mark between the B.C. years and the A.D. years. But we really cannot blame Dionysius, for he did not know about zeros. Zeros had not yet been invented. In fact, it wasn't until the 110's A.D. that the zero appeared in Sicily where Dionysius lived.

Thus, it is not feasible to turn back time to a specific date and search for the Star of Bethlehem. But this is after all a Biblical event so what is more logical than to study the scriptures. In the New Testament we discover passages which provide us with a range of dates for the Christmas story. From St. Matthew we determine the latest possible date for the birth of Jesus, while from St. Luke, we get clues for the

For the earliest possible date. Let us first turn our attention to the Gospel of St. Matthew where we find the following: "Now when Jesus was born in Bethlehem of Judea, in the days of Herod the King, behold there came Wise Men from the east to worship him!" The important part in this passage is "in the days of Herod the King". Herod the King was alive when Jesus was born. St. Matthew tells us this! Fortunately, we know a great deal about King Herod. Herod was a very wicked King and much was written about him by Flavius Josephus who, in 95 A.D., wrote a very scholarly work titled "The Antiquity of the Jews!" In this, he reveals how Herod became ill and immediately thereafter, the feast of the Purim was celebrated. This Jewish feast day occurs at the time of a full moon. On the following full moon the feast of the Passover is celebrated. This is the first full moon occurring after the first day of Spring. Returning to our reading of "The Antiquity of the Jews", we discover on that particular feast of the Purim the high priest, for reasons we will not discuss, was unable to celebrate the feast and a substitute high priest by the name of Matthias took part that evening. Reading on in the records of Flavius Josephus, we are told that on that very evening there was a partial eclipse of the Moon. At last, a scientific clue, for we know that there was only one partial lunar eclipse back in that time coinciding with a Jewish feast day and that eclipse occurred on the day we would call March 13th of A.D.C. This is important to our search because we next

read that Herod had died of his illness - was buried and the seven day mourning period was over by the time of the next feast - the feast of the Passover. This would have been the date of the full moon on April 12th of 4 B.C. Thus, when the seven day mourning period is subtracted, April 5th of 4 B.C. becomes the latest possible date on which Herod the King was alive. And, Jesus was born in the days of Herod the King. But do you recall why the Wise Men came to Herod? They were searching for the birthplace of Jesus. The Wise Men questioned Herod as to the location of the birthplace of this child Jesus. But Herod didn't know. He knew nothing at all about the birth. He knew nothing at all about the star. His astrologers - his astronomers we should say because Judea was not under the influence of astrology - knew nothing about a star in the sky. There was no bright object to be seen. The shepherds never saw the star. Only the Wise Men saw the star and the Wise Men were astrologers. The Wise Men were priests or magi from Persia and they had seen a sign in the sky. They had seen something that had brought them to Judea - to Jerusalem where Herod the King reigned. Upon hearing what the Wise Men had to tell, Herod inquired diligently of them. He finally sent them on their way requesting them to stop on their return journey and report to him. But they did not, as you recall - they returned by an alternate route. In one Gospel we read how an angel appeared before Joseph and Mary and told them to take Jesus into Egypt and there they remained until Herod had died, before they returned.

But before Herod died, based upon the information given him by the Wise Men, he ordered all children two years and younger to be slain - which would place the birth of Jesus sometime in 6 B.C., two years earlier than Herod's death in 4 B.C. The earliest possible date for the birth of Jesus we determine from the Gospel of St. Luke where we read the following: "There went out a decree from Caesar Augustus that all the world should be taxed". Now these decrees came from Rome. They had to be carried by couriers across the seas to the various provinces. Each of the governors, exercising their own right, would issue their own decree after making arrangements to collect the taxes. Thus, we must allow time for the message to get from Rome to the governors and additional time for each governor to issue a decree that a tax should be enacted. Since it was customary for the people to journey to their hometown for the collection of these taxes, additional time must be accounted for. It was for taxation purposes that Joseph took Mary to his hometown - Bethlehem. If only we could determine when this tax was enacted, we would have another clue.

In 1923, in Ankara, Turkey, there was unearthed an old Roman monument that told of three great taxations. One in 28 B.C. - much too early for our story - one in 14 A.D. - absolutely impossible, for Herod was dead by that time - and one in 6 B.C. - which allowing sufficient time for collection would indicate that Jesus was born in 7 or 6 B.C. for the sign or star seen by the Wise Men. Before doing this, however, there

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Now what was this sign and why have we taken you back

to 9 B.C.? Possibly the first idea advanced was that the Christmas star might have been a meteor, a shooting star or falling star, as it is commonly called. If it was not a shooting star, could it have been an exploding star that we seek? A Nova - there are such things. One good example that we see is the crab nebula. Another example is a comet. Comets can be among the most awsome sights in the heavens. Some great comets were visible near the sun in the daylight. Others have arched long ghostly trails throughout the greater part of the sky. Our purpose is to conduct a search moving from early December of 9 B.C. forward in time to the Spring of 6 B.C. We propose to do just that by speeding up time so rapidly that an entire year will pass before your eyes in approximately three minutes. We, on Earth, move about the sun and, it appears to slip across the heavens in an eastward direction. In fact, everything appears to be moving eastward across the sky. Did we say everything? At times some of the celestial objects appear to move westward for a while after which it resumes its eastward motion and behaves itself. Thus, everything, once again, seems to be in order. We call this retrograde motion. These motions confused our ancestors and they thought the planets were gods. Soon men actually began to believe the planets really were gods and they gave them the attributes of the gods and they said these had an influence on persons living here on the Earth. From this evolved that nonsensical, pseudo-science called astrology. Can mere chunks of material orbiting about the Sun be so influential? Speaking of the Sun, a whole

year has gone by. We began in December of 9 B.C., moved very rapidly into 8 B.C.; we are now moving into 7 B.C., we can still see those "gods" in the sky, the planets. When one of the gods lines up very close to another, is there any significance to this? The astronomer calls such a meeting a conjunction. Centuries ago ancient astrologers believed the gods were in conference at the time of a conjunction and they were plotting something. Something great - something good - something evil - something to happen.

It can be seen that planets moving rapidly around the Sun will have conjunctions quite frequently, but when you observe planets like Jupiter and Saturn, they will have a conjunction only rarely. If it takes Jupiter twelve years to travel once around the Sun, and Saturn thirty years then, only once every twenty years will these two objects be back together but in a different part of the sky. How many times during your lifetime would you expect to see a conjunction of the planets Jupiter and Saturn? About three, assuming that you saw the first one in your adolescent years. Some persons, however, may have seen this first one in early childhood and have a long life in which case they may see four. Three, however, would be the average number of conjunctions.. How many people would even pay attention to one when they did see it, unless they were interested in the astrological significance. During the Spring of 7 B.C. astrologers saw Jupiter overtake Saturn and then begin its retrograde motion in the sky. Saturn also was seen backing up in the sky at the same time because we, on the Earth, were passing both of those planets. As Earth passes

a superior planet, the planet will appear to retrograde. Jupiter being closer, retrogrades faster than Saturn. Can you imagine the fear and terror in the hearts of the astrologers, the priests from Persia, the Wise Men when they saw this second passage actually happening on October the 5th of 7 B.C. The first conjunction had occurred on May 27th. But the Earth moves on - in its orbit about the Sun and as we pass on our way, both Jupiter and Saturn resume their direct or eastward motion. Jupiter, being closer to the Sun, moves faster than Saturn and thus passes Saturn for a third time on December 1st of 7 B.C. Three conjunctions of the planets Jupiter and Saturn in one year! Nobody alive had ever seen this before because the last time it had happened was 139 years prior to 7 B.C.! Now, as if all this were not enough, in the Spring of 6 B.C., on February the 25th, a third planet - Mars - joined the others to form a triangle four degrees by four degrees by seven degrees. The astrologer refers to this particular arrangement as a trigon. It too has great astrological significance to him and, as if all this were not enough, it occurred in the constellation of Pisces the Fishes, which then was known as the House of the Hebrews. Perhaps, the Wise Men, the Magi, the priests of Persia saw the watery trigon as a sign and traveled to Jerusalem. Although the sign was before them as they traveled west, could they have not said "We in the east have seen his star and have come to worship him?" Have we shown you a star? It was a sign and all signs were ~~tell~~ told them back then. You can find passages in the Bible

where the seven stars that make up the constellation Orion are referred to as the star Orion. So, perhaps, this may have been the Star of Christmas. But does it really matter? We think not. The important thing is that Jesus was born and having been born lived a life which has had a very profound affect upon the lives of many others. The celebration of his birth has become known as Christmas. The season of Christmas has come down through the centuries as a time of good will and fellowship. This fellowship is often reflected in the innocent joy of children and now in that spirit, we would like to express the wish that you willl find this a very prosperous and a very happy season and we wish you all a very Merry Christmas!

*Allen Memorial
Planetarium
12/72*

*Community Affairs File
Vigo County Public Library
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Welcome to the Allen Memorial Planetarium.

Astronomy has a stake in the celebration of Christmas, in the scriptural story of the star of Bethlehem and the answers to the many questions that are asked. The Christmas story is a vehicle for many kinds of information and an opportunity to enhance the value of the planetarium in the community. Citizens in Vigo County are extremely fortunate in having the Allen Memorial Planetarium. The main concern of the planetarium is the instruction of Astronomy in the Vigo County School Corporation. A planetarium has the ability to relate all subject areas to astronomy. One of the favorite topic's at this time of year is the Star of Bethlehem. We hope to combine the many aspects of scriptural and scientific information known to us today and bring you our interpretation of the Christmas story.

You may notice that night is coming upon us and we see the heavens in their full splendor. The constellation patterns are no different than when Man first invented them centuries ago nor will they change for many centuries to come.

In Terre Haute, Indiana the north star (Polaris) during our lifetime and for several generations to come is at the Celestial north pole and all stars appear to turn around it. We are going to set the sky as it appeared in 9 B.C. in Bethlehem. Notice the stars no longer appear to turn about Polaris the north star. Now, the closest star

to the pole is Kochab. Looking at the surrounding countryside you discover that the land is not very fertile. Agriculture surely does not flourish. The principle occupation is sheep-herding.

What was the star of Christmas? Does anyone know for sure? Although we may never know just what the star actually was, we have a good idea. Perhaps you are thinking, why not run the planetarium instrument back 1,972 years from 1972 to the night of December 25th and look for the star? It is not that simple. It was many centuries after the birth of Jesus that a system of numbering the years, based on his birth, came into common usage. It wasn't until the year now called 533 A.D. that a monk, by the name of Dionysius, decided to design a calendar divided into two parts. The pre-Christian or B.C. years, and those in the year of his Lord, the A.D. years. Up to that time, the calendar used was based upon the founding of Rome. The year in which Rome was founded was called year 1, followed by year 2, 3, 4, 5, and so forth Ab Urba Condita, which means from the founding of the city. Dionysius wanted to change all that. But he had a problem! He had to decide upon a date for the birth of Jesus and it wasn't easy. Reading the writings of many men, he found in those of Clement of Alexandria, who wrote around 100 A.D. that Jesus was born in the 28th year of the reign of Caesar Augustus and Dionysius said "Ah Ha! - that's the answer! All I have to do is find out when Caesar became the ruler of the Roman Empire, count ahead 28 years, and that will be the year in which Jesus was born!"

Well - he searched the records and found that it was in

the year 727 Ab Urba Condita when a man by the name of Octavius assumed the title of Caesar Augustus. But that's only a title and it may not have been the date on which he became ruler of the Roman Empire. But taking the year 727 A.U.C. as the starting point, and counting ahead by the inclusive method, Dionysius arrived at the year 754 Ab Urba Condita as the year for the birth of Jesus. However, we have reasons to believe that this was in error by four years because Octavius was really the ruler of the Roman Empire before this. It was not until four years after that the title of Caesar Augustus was conferred upon him. Thus, there's a probable error of four years. But there is still another error in our calendar-keeping because Dionysius took that year of 754 A.U.C. and called it 1 A.D. This he should not have done. He should have called it the year 0. After all, when a child is born he is not one year old. We need a zero as a dividing mark between the B.C. years and the A.D. years. But we really cannot blame Dionysius, for he did not know about zeros. Zeros had not yet been invented. In fact, it wasn't until the 110's A.D. that the zero appeared in Sicily where Dionysius lived.

Thus, it is not feasible to turn back time to a specific date and search for the Star of Bethlehem. But this is after all a Biblical event so what is more logical than to study the scriptures. In the New Testament we discover passages which provide us with a range of dates for the Christmas story. From St. Matthew we determine the latest possible date for the birth of Jesus, while from St. Luke, we get clues for the

For the earliest possible date. Let us first turn our attention to the Gospel of St. Matthew where we find the following: "Now when Jesus was born in Bethlehem of Judea, in the days of Herod the King, behold there came Wise Men from the east to worship him!" The important part in this passage is "in the days of Herod the King". Herod the King was alive when Jesus was born. St. Matthew tells us this! Fortunately, we know a great deal about King Herod. Herod was a very wicked King and much was written about him by Flavius Josephus who, in 95 A.D., wrote a very scholarly work titled "The Antiquity of the Jews!" In this, he reveals how Herod became ill and immediately thereafter, the feast of the Purim was celebrated. This Jewish feast day occurs at the time of a full moon. On the following full moon the feast of the Passover is celebrated. This is the first full moon occurring after the first day of Spring. Returning to our reading of "The Antiquity of the Jews", we discover on that particular feast of the Purim the high priest, for reasons we will not discuss, was unable to celebrate the feast and a substitute high priest by the name of Matthias took part that evening. Reading on in the records of Flavius Josephus, we are told that on that very evening there was a partial eclipse of the Moon. At last, a scientific clue, for we know that there was only one partial lunar eclipse back in that time coinciding with a Jewish feast day and that eclipse occurred on the day we would call March 13th of 4 B.C. This is important to our search because we next

read that Herod had died of his illness - was buried and the seven day mourning period was over by the time of the next feast - the feast of the Passover. This would have been the date of the full moon on April 12th of 4 B.C. Thus, when the seven day mourning period is subtracted, April 5th of 4 B.C. becomes the latest possible date on which Herod the King was alive. And, Jesus was born in the days of Herod the King. But do you recall why the Wise Men came to Herod? They were searching for the birthplace of Jesus. The Wise Men questioned Herod as to the location of the birthplace of this child Jesus. But Herod didn't know. He knew nothing at all about the birth. He knew nothing at all about the star. His astrologers - his astronomers we should say because Judea was not under the influence of astrology - knew nothing about a star in the sky. There was no bright object to be seen. The shepherds never saw the star. Only the Wise Men saw the star and the Wise Men were astrologers. The Wise Men were priests or magi from Persia and they had seen a sign in the sky. They had seen something that had brought them to Judea - to Jerusalem where Herod the King reigned. Upon hearing what the Wise Men had to tell, Herod inquired diligently of them. He finally sent them on their way requesting them to stop on their return journey and report to him. But they did not, as you recall - they returned by an alternate route. In one Gospel we read how an angel appeared before Joseph and Mary and told them to take Jesus into Egypt and there they remained until Herod had died, before they returned

But before Herod died, based upon the information given him by the Wise Men, he ordered all children two years and younger to be slain - which would place the birth of Jesus sometime in 6 B.C., two years earlier than Herod's death in 4 B.C. The earliest possible date for the birth of Jesus we determine from the Gospel of St. Luke where we read the following: "There went out a decree from Caesar Augustus that all the world should be taxed". Now these decrees came from Rome. They had to be carried by couriers across the seas to the various provinces. Each of the governors, exercising their own right, would issue their own decree after making arrangements to collect the taxes. Thus, we must allow time for the message to get from Rome to the governors and additional time for each governor to issue a decree that a tax should be enacted. Since it was customary for the people to journey to their hometown for the collection of these taxes, additional time must be accounted for. It was for taxation purposes that Joseph took Mary to his hometown - Behtlehem. If only we could determine when this tax was enacted, we would have another clue.

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Community Affairs File

Vigo County Public Library

Can you imagine how the ancient Greeks
would have thought of us
today? Our planet has
been around for thousands of years.

Early mention of astronomy in literature was
seen in the Greek and Indian legends.

ASTRONOMY IN LITERATURE

The constellation Pegasus was born
when the winged horse Pegasus was born
of the monster Medusa, the horse flew away
and was tamed with a golden bridle by the goddess Athena.
Later, Athena gave him to a fighter going into war, but when
the soldier became too proud, Pegasus threw him off. Zeus
then made the winged horse into a constellation.

An Indian legend tells about seven wives who journeyed
out to find something to eat. They discovered wild
onions and ate many of them. When they went home, their
husbands told them to never eat the onions again, but the
next day they went out eating onions again. When their
husbands came home, their husbands were furious and they
began chasing their wives, so the wives ran to the top of a
hill and jumped into the sky where they became seven stars,
the Pleiades. The husbands began to feel sorry for what they
had done, and so they ran after their wives but it was too
late. They too jumped into the sky and became the Hyades.
You can still see them but the husbands never quite catch
their wives. Both of the

Research by

Delaine Peffley

In the fourteenth century, the people believed that man's
fate was ruled by the stars. Script by
by Geoffrey Chaucer, a fourteenth century poet also known as the
"father of English poetry" Melanie Ash
Melanie Ash
Vicki Bostick
Paige McNeil
Marcia Doley

"Thou Chanc, Mene, Natura, and men's waives."

Script by Vicki Bostick
Narrated by Vicki Bostick
All under God, our nation by these we stand
though we poor, Paul Wert

Popcorn is born, with the sun and all ready,

And butter, cheese, and flour.

Popcorn is born, with the sun and all ready,

This page was written in May, 1982, in Vigo County, Indiana. It
was the second page of my longest page of writing.

Can you imagine what the ancient Greeks thought as they looked into the sky at night? Can you imagine pictures of your own?

Early mention of astronomy in literature was in the Greek myths and Indian legends.

The constellation Pegasus has an interesting Greek myth behind it. The winged horse Pegasus was born from the blood of the monster Medusa. The horse flew up to join the gods and was tamed with a golden bridle by the goddess Athena. Later, Athena gave him to a fighter going into war, but when the soldier became too proud, Pegasus threw him off. Zeus then made the winged horse into a constellation.

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In the fourteenth century, the people believed that man's fate was ruled by the stars. In the poem Troilus and Cressida by Geoffrey Chaucer, a fourteenth century poet also known as the "father of English poetry", there is again a reference to man's fate being ruled by the stars. Chaucer says,

"Thou Chance, executrix of each man's weird!

O Influences dwelling in the sky!

All under God, our fates by these are steered

Though we poor brutes the cause cannot descry...

The curbing moon, with her two horns all pale,

And Saturn, Jove, and Cancer so united

That all the rains of heaven now assail the earth."

This poem was written in May, 1385 and it is known that at this time Saturn was at 90° longitude, Jupiter would have

seen at 94° Longitude, the constellation Cancer would have been the background stars. The "curving moon, with her two horns" means that the moon was in the crescent phase.

Canterbury Tales, also written by Chaucer, was written as a frame story so that Chaucer could put several different stories together into one. In the Prologue, Chaucer says,

" and the young sun

Into the Ram one half his course has run."

The Ram is the constellation Aries. We can judge from this that the pilgrimage is being made around the middle of April.

The Doctor on the pilgrimage was supposedly a student of astronomy. He used horoscopes to help his patients and he looked into the stars to see how long a patient might take to recover.

Shakespeare seems to have had quite a knowledge of astronomy, plus he used the beliefs of astrology that were commonly held then. Elizabethans believed that heavenly bodies could influence the lives of men. Most of them also believed in a Divine Providence, but they were somehow able to reconcile the two beliefs. In the first act of Romeo and Juliet, by William Shakespeare, Romeo says,

"I fear, too early; for my mind misgives
Some consequence, yet hanging in the stars
Shall bitterly begin his fearful date
With this night's revels, and expire the term
Of a despised life closed in my breast,
By some vile forfeit of untimely death."

Romeo is saying that he believes the stars hold bad luck for him this night. In a later scene Juliet says,

"The clock struck nine when I did send the nurse,
Now is the sun upon the highest hill
Of this day's journey, and from 9 till 12
is three hours long, yet she is not come."

From this we realize that they told time, as had people centuries before them, by using the sun. We still use this idea of when the sun is directly overhead on the meridian, it is twelve noon. In another act of the play Romeo and Juliet are talking and Juliet says,

"Yond light is not daylight

It is some meteor which the sun exhales"

And Romeo answers,

"Look love, what envious streaks

Do lace the severing clouds in yonder east

Night's candles are burnt out."

In the 1500's when Shakespeare was writing, it was believed that meteors were formed by fiery gases, sucked up and thrown off by the sun. Juliet could have very possibly seen a meteor, or falling star, since scientists estimate about 200,000,000 enter the earth's atmosphere each day. They are only a piece of metallic or stony matter but because of the friction with the air they glow brightly. All that Romeo is referring to is that the sun is coming up and the stars can no longer be seen. Romeo is not wanting to leave Juliet and so he says,

I'll say yon gray is not the morning's eye,

'Tis but the pale reflex of Cynthia's brow."

"Cynthia" was a name used then in place of Diana, the goddess of the moon, so he is referring to the reflection of the moon.

In the play Julius Caesar, Shakespeare again shows his knowledge of astronomy. Near the beginning of the play Cassius says,

"Men are sometimes the master of their fates.

The fault dear Brutus is not in our stars,

but in ourselves."

Here Cassius is refuting the common belief that the stars rule men.

In a later scene three men argue about the direction in which the sun rises. Finally Casca points out that since it is only March the sun is rising towards the south, not directly in the east and that later it will be rising in the north.

When Caesar's wife, Claphurnia, is talking about her strange visions before the death of her husband, she also says,

"When beggars die there are no comets seen;

The heavens themselves blaze forth the death of princes."

This signifies the belief of the Romans in natural phenomenon signifying events of great importance.

Right before his murder, Caesar compares himself with the North Star.

"I am as constant as the northern star,
of whose true fixed and resting quality there —
is no fellow in the firmament."

He says all the other stars move and wander just like men, but he is like Polaris, the only one who remains stable and constant.

During the seventeenth century John Milton wrote Paradise Lost, a long poem written in twelve books. It is the story of the long struggle between the Devil and God.

At one point in the poem God is compared with the wonders of the sky. Milton says God's power is:

"As when the Sun new ris'n
Looks through the Horizontal misty Air
Shorn of his Beams, or from behind the Moon
In dim Eclips disastrous twilight sheds
On half the Nations, and with fear of change
Perplexes Monarchs...

And when thou fallest
Moon, that now meetst the orient Sun, now fli'st
With the fixt Starrs, fixt in their Orb that flies,
And ye five other wandring Fires that move."

At this time people believed that the stars were fixed to a

large sphere and that the whole sphere moved. The "five wandering Fires" are the planets Mercury, Venus, Mars, Jupiter, and Saturn.

The Rime of the Ancient Mariner by Samuel Taylor Coleridge is about a mysterious sea voyage. Several times Coleridge refers to the sun and the moon. One verse says,

"All in a hot and copper sky,
The bloody sun at noon
Right up above the mast did stand
No bigger than the moon...
The sun came up upon the left
Out of the sea came he
And he shone bright, and on the right
Went down into the sea."

From this verse, we can tell that the ship was sailing south.

In the book, A Connecticut Yankee in King Arthur's Court by Mark Twain, the astronomical phenomena that occurs is a solar eclipse. In 1879, a man in Hartford, Connecticut was hit on the head with a crowbar. When he came to, he was told he was in England and the date was 528 A.D. He was picked up by a knight and was in danger of being burned at the stake because he was a stranger. But he announced that he was a magician and if they tried to kill him he would "smother the whole world in the dead blackness of midnight; blot out the sun and have it never shine again; have the fruits of the earth rot for lack of light and warmth; and have the peoples of the earth famish and die, to the last man!" Merlin insisted that they pay no attention but as they started to touch the stake where he was tied, with the torch, the shadow of the moon began to pass across the sun. The man's life was saved and he became the most celebrated man in England because of his knowledge of astronomy.

In the book, Far from the Madding Crowd, Thomas Hardy shows his knowledge of astronomy as he talks about standing on a hill and watching the eastward procession of the stars. He says,

"To persons standing alone on a hill during a clear night such as this, the roll of the world eastward is almost a palpable movement. The sensation may be caused by the panoramic glide of the

stars past earthly objects, which is perceptible in a few minutes of stillness or by the better outlook upon space that a hill affords, or by the wind, or by the solitude; but whatever be its origin the impression of riding along is vivid and abiding."

Hardy also mentions that the Bear is now on the meridian and as he looks up he notices a difference in the color of the stars. He says Capella was yellow, and Aldebaran and Betelgeuse were a fiery red. Yellow stars are about average as far as the amount of heat they give off. Red stars are usually giant stars which are comparatively cool.

In the book Hawaii by James Michener, the Polynesians are moving from their homeland of Bora Bora to populate the islands of Hawaii.

"As the large canoe moved northward it became obvious to the astronomers on board that they must lose, and forever, many old, familiar stars which lay below what astronomers would later call the Southern Cross. Whole constellations were washed into the sea, never to be seen again."

This was cause for regret, but not alarm, for the men of Bora Bora were exceptional astronomers.

They had established a calendar of twelve months based on the sun; they could predict the appearance and motion of the stars; they knew about phasings of the moon, and they could even count ahead six months and tell what constellation the sun would be in.

On the eleventh night of their voyage, two astronomers observed a new star. One of them pointed out that the star lay in a direct line from the two stars in Bird-with-a-Long-Neck.

They studied the star for two nights and after they had triangulated the sky in every known way, they came to the conclusion that the star did not move.

One of the men finally tied his thoughts together saying,
"If it hangs there forever, then every island must stand in some relationship to it. Therefore, once you know how high that star is, you know exactly how far north or south you must sail in order to find your island."

He knew that northern sailors had what southerners did not: a star which could tell them, at a single glance, their latitude.

For the rest of the voyage he was at peace because of the discovery of Polaris.

In the book A Cypress Grove, Drummond says,

"The element of fire is quite put out, the air is but water rarified, the earth is found to move, and is not more the Center of the Universe, it is turned into a Magnes; Starres are not fixed, but swimme in the etheriall spaces, Cometes are mounted above Planetes; some affirme that there is another world of men and sensitive Creatures, with Cities and Palaces on the Moone, the Sunne is lost, for it is but a light made of the conjunction of manie shining bodies together, a Clift in the lower heavens, through which the Rayes of the highest difuse themselves, is observed to have Spits; Thus, Sciences by the diverse motiones of this Globe of the Braine of Man, are become Opinione nay errors, and leave the imagination in a thousand Labyrinthes. What is all we know ccompared with what we know not?"

In the poem Child Moon by Carl Sandburg recreates a child's wonder of the moon. He writes,

The child's wonder
At the old moon
Comes back nightly.
She points her finger
To the far silent yellow thing
Shining through the branches
Filtering on the leaves a golden sand,
Crying with her little tongue, "See the moon!"
And in her bed fading to sleep
With babblings of the moon on her little mouth.

Sara Teasdale writes in her poem, The Falling Star, her impressions of a falling star. She wrote,

I saw a star slide down the sky,
Blinding thenorth as it went by,
Too burning and too quick to hold,
Too lovely to be bought or sold,
Good only to make wishes on
And then forever to be gone.

As Miss Teasdale writes, many people believe that if one wishes on a falling star one's wish will come true.

In all the quotes previous the authors have used astronomy as factual happenings. Not all authors use astronomy as factual happenings, however. Let us take for example Henry David Thoreau's book Walden. In Walden, Thoreau tries to describe his complete isolation by comparing it to the sky. He says,

"Where I lived was a far off as many a region viewed
nightly by astronomers. We are want to imagine rare
and delectable places in some remote and more celestial
corner of the system, behind the constellation

Cassiopeia's chair, far from noise and disturbance.

I discovered that my house actually had its site in such a withdrawn, but forever new and unprofaned, part of the universe. If it were worth the while to settle in those parts near to the Pleiades or the Hyades, to Aldebaran or Altair, then I was really there, or at an equal remoteness from the life which I had left behind, dwindled and twinkling with as fine a ray to my nearest neighbor, and to be seen only in moonless nights by him."

Of course not all people have the same opinion of astronomy as those who are scientifically minded. A good example of this is Walt Whitman's poem, When I Heard the Learn'd Astronomer. Whitman writes,

When I heard the learn'd astronomer;
When the proofs, the figures, were ranged in columns
before me;
When I was shown the charts and the diagrams, to add,
divide, and measure them;
When I, sitting, heard the astronomer, where he
lectured with much applause in the lecture-room,
How soon, unaccountable, I became tired and sick;
Till rising and gliding out, I wander'd off by myself,
In the mystical moist night-air, and from time to time,
Look'd up in perfect silence at the stars.

These are just a few examples of astronomy in literature. As you can see, astronomy is often referred to in literature for many purposes. For example, describing a place, expressing an opinion, and showing feelings. We hope in the future, when reading any of the great works, astronomical references will be more enjoyable.